

**Amendments to the Claims:**

This listing of claims replaces all prior versions, and listings, of claims in the application.

Please cancel claims 2-4, 7, 8, and 18, without prejudice.

Please amend claims 1, 5, 6, 9, 11, 17, and 19 as indicated below. Material to be inserted is in **bold and underline**, and material to be deleted is in ~~strikeout~~ or (if the deletion is of five or fewer consecutive characters or would be difficult to see) in double brackets [[ ]].

**Listing of Claims:**

1. (Currently Amended) **The device of claim 12,** ~~A device for sorting particles, comprising:~~

~~a channel structure defining a channel having an inlet and first and second outlets;~~

~~a first transport mechanism configured to create a particle stream of first particles and one or more second particles, each particle traveling along the channel from the inlet toward the first outlet and disposed in a fluid supported by the channel structure; and~~

~~a second transport mechanism configured to be pulse activated to selectively move at least one of the second particles from the particle stream and toward the second outlet;~~

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wherein the substrate assembly ~~channel-structure~~ defines a passage disposed in fluid communication with the channel and generally opposing the second outlet, and wherein the passage includes a fluid diode configured to restrict fluid backflow created by operation of the second transport mechanism.

2. (Canceled)

3. (Canceled)

4. (Canceled)

5. (Currently Amended) The device of claim 12 [[4]], wherein the first transport mechanism is configured to produce a pressure drop along the channel.

6. (Currently Amended) The device of claim 12 [[1]], wherein the substrate assembly ~~channel-structure~~ is configured so that the particles stream follow[[s]] a path from the inlet to the first outlet without operation of the second transport mechanism, and wherein the second transport mechanism is configured to exert pressure pulses directed transverse to the path.

7. (Canceled)

8. (Canceled)

9. (Currently Amended) The device of claim 12 [[1]], wherein the channel is a first channel and the inlet is a first inlet, the substrate assembly ~~channel-structure~~ defining a second channel adjacent to the first channel and configured to carry another fluid from a second inlet to a third outlet, and wherein the second outlet of the first channel places the first channel in fluid communication with the second channel.

10. (Canceled)

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11. (Currently Amended) The device of claim 12 ~~[[1]]~~, further comprising an optical sensor configured to sense the at least one second particle and ~~in the particle stream, the optical sensor being~~ coupled to the second transport mechanism so that sensing the at least one second particle actuates the second transport mechanism.

12. (Previously Presented) A device for sorting particles, comprising:

a substrate assembly including a substrate, a plurality of thin-film electrical devices formed on the substrate, and a fluid barrier connected to the substrate such that the substrate assembly defines a channel having an inlet and first and second outlets, the channel and the thin-film electrical devices being disposed generally between the substrate and the fluid barrier;

a first transport mechanism configured to move first particles and one or more second particles in the channel from the inlet toward the first outlet, the first particles and one or more second particles being disposed in a fluid; and

a second transport mechanism configured to apply a transient pressure pulse on the fluid so that at least one of the second particles is selectively moved toward the second outlet,

wherein the second transport mechanism includes a thin-film heater element, a thin-film piezoelectric element, or both, and wherein the thin-film heater, the thin-film piezoelectric element, or both are included in the thin-film electrical devices.

13. (Canceled)

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14. (Original) The device of claim 12, wherein the first transport mechanism is configured to create a flow of the fluid through the channel, and wherein the flow of the fluid carries the first particles and one or more second particles.

15. (Original) The device of claim 14, wherein the second transport mechanism is configured to apply the transient pressure pulse to a segment of the fluid in which the at least one second particle is disposed.

16. (Original) The device of claim 12, wherein the channel structure is configured so that the first particles and one or more second particles follow a path from the inlet to the first outlet without operation of the second transport mechanism, and wherein the transient pressure pulse is directed transverse to the path.

17. (Currently Amended) The device of claim 12, wherein the substrate assembly defines ~~A device for sorting particles, comprising:~~

~~a channel structure defining~~ first and second channels that extend adjacent one another and between respective pairs of opposing ends of the first and second channels, the substrate assembly ~~channel structure~~ further defining a transverse channel that connects the first channel to the second channel intermediate the pair of opposing ends of each channel, [[:]]

wherein the [[a]] first transport mechanism is configured to send respective first and second streams through the first and second channels, the first stream including first particles and one or more second particles, [[:]] and

wherein the [[a]] second transport mechanism is configured to selectively move at least one of the second particles from the first stream in the first channel to the second stream in the second channel via the transverse channel.

18. (Canceled)

19. (Currently Amended) The device of claim 12 [[17]], wherein the first particles and the one or more second particles are different types of cells.

20. (Original) The device of claim 17, wherein the first stream follows a path, and wherein the second transport mechanism is configured to apply transient pressure pulses to the first stream and transverse to the path.

21-40. (Canceled)

41. (Previously Presented) The device of claim 12, wherein the second transport mechanism includes a thin-film heater.

42. (Previously Presented) The device of claim 17, wherein the transverse channel provides the same path between the first and second channels whether or not the second transport mechanism is selectively moving a second particle.